

Trends in Glucose-lowering Drugs: Increase in Insulin Use Among Patients with Uncontrolled Type 2 Diabetes in Public Health Clinics from 2011 to 2020

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NMRR-19-3566-52314 (IIR)

1. Introduction

- Glucose-lowering drugs (GLD) are prescribed for patients with type 2 diabetes (T2D) when good glycaemic control could not be achieved with lifestyle modification alone.
- Choices of treatment (oral or injectable, single drug or in combination) differ depending on the levels of HbA1c and patient conditions.
- With advancement in technology and new research evidence, newer drugs were developed and recommendations for management were updated including approaches in pharmacotherapy.
- This study aimed to assess patterns and trends in GLD among T2D patients with different HbA1c control.
- The information could help better understanding of current practice, serve as baseline and guide direction for further improvement in policy implementation and clinical practice.

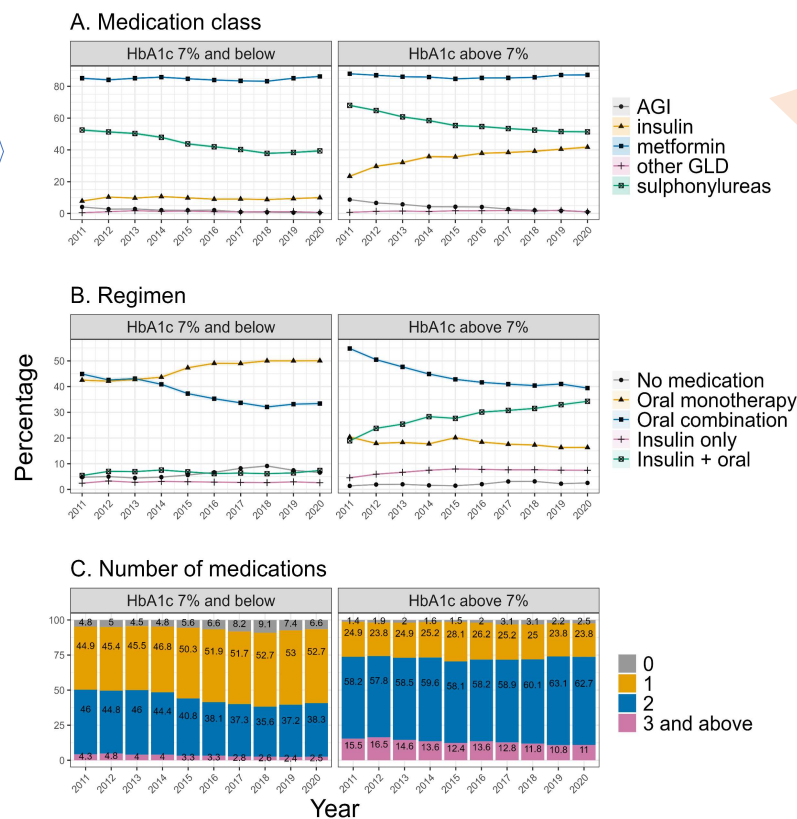
2. Method

-  Data source: National Diabetes Registry – annual clinical audits
-  Inclusion: T2D, aged ≥ 18 , HbA1c recorded. If a patient was audited more than once during this period, only the first record was included.
-  Study period: 2011 – 2020
-  **A. Class:** metformin, sulphonylureas, alpha-glucosidase inhibitors (AGI), insulin, and other GLD (thiazolidinediones, meglitinides, dipeptidyl peptidase-4 inhibitors (DPP4-i), sodium-glucose cotransporter-2 inhibitors (SGLT2-i))
- B. Regimen:** no medication, oral monotherapy, oral combinations, insulin only, insulin + oral
- C. Number of medications:** 0, 1, 2, 3 and above
-  Percentages of use were calculated for each year stratified by HbA1c control: controlled ($\leq 7\%$) and uncontrolled ($>7\%$)

3. Results & Discussion

Majority of the 313,086 patients included in this study were women (61%), Malay (64%), with a mean age of 60 ± 11 years, had a median (Q1, Q3) diabetes duration of 5.1 (2.5, 9.0) years, and had uncontrolled HbA1c (55%).

The increasing use of insulin among uncontrolled diabetics appeared to follow the recommendations from the 2015 Malaysia clinical practice guidelines (CPG) on diabetes management.¹ However, it is uncertain whether this increased use of insulin improved glycaemic control and patient outcomes.



Low usage of other GLD with additional cardiovascular and kidney protective effects such as glucagon-like peptide-1 receptor agonists (GLP1-RA) and SGLT2-i may be due to high cost and limited availability.²

The 2020 CPG on diabetes management recommends earlier use of combination therapy and encouraged the use of GLD with cardiorenal benefits.³ Further research is needed to assess the trends in GLD use following the updated CPG.

Figure 1: Trends in the use of glucose-lowering drugs among type 2 diabetic patients in public health clinics, 2011-2020. (Total N= 313,086)
 AGI: alpha-glucosidase inhibitors. "Other GLD" included mainly thiazolidinediones and meglitinides before 2015, and thiazolidinediones, dipeptidyl peptidase-4 inhibitors and meglitinides from 2015.

4. Conclusion

Metformin was the most frequently prescribed medication for T2D patients between 2011 and 2020. The use of sulphonylureas decreased concurrently with the rising use of insulin among patients with uncontrolled T2D. Further study is required to examine the impact of these trends on patient outcomes and assess the trends in GLD use following the updated CPG.

References:

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Acknowledgments:

We would like to thank Dr. Feisul Idrwan Mustapha, Dr. Norayana Binti Hassan, and the officers from the Disease Control Division, Ministry of Health Malaysia for their support in the provision of the data.